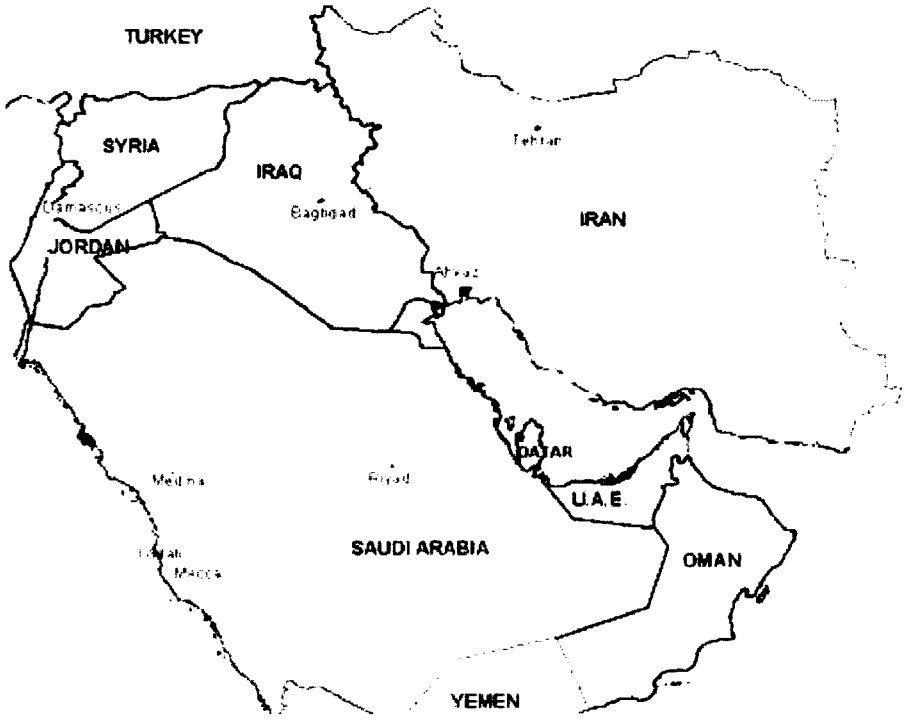
Executive Summary CJTF-7 2004 Malaria Prophylaxis Policy

3. WHERE:

a. MND-N, MND-SE, MND-C, MND-CS north of ASR Boston

b. The assessment depicted in yellow in the figure below approximates the geographic distribution of malaria during the transmission season. Boundaries of the risk area should not be interpreted as strict demarcations. Malaria risk is not uniform throughout the region, but varies with multiple ecological factors such as human population density and vector density, vector breeding habitat, and control measures.



4. WHEN: 1 APR 04 - 1 NOV 04

5. WHY: To decrease the threat of malaria cases in the unprotected force of up to 1% per month April through November, resulting in an estimated 325 cases.

5. RISK:

a. Mosquito vectors are present. Malaria transmission occurs in the region.
b. 1994 and 1995: more than 90,000 cases per year countrywide.
c. 1998 cases had declined to approximately 10,000 per year.
d. 2002, fewer than 1,000 cases were reported, mostly from northern areas.
e. 2003: 217 cases in Mosul, mostly in children under 5; Kirkuk 31 cases.
f. 2004: 9 cases in the indigenous immune population of Al Faw.

FACT SHEET MALARIA

The following information will help you to become familiar with the epidemiology, symptomatology, ecology and control of Malaria.

WHAT IS MALARIA?

Malaria is a parasitic disease transmitted through the bite of mosquitoes in the genus *Anopheles*. The disease, known to occur in tropical and subtropical areas worldwide.

Four forms of the parasite that causes human malaria have been identified; *Plasmodium falciparum, P. vivax, P. malariae* and *P. ovale*.

HOW IS MALARIA TRANSMITTED?

Dengue is transmitted through the bite of infected *Anopheles* spp. mosquitoes. Most species feed at dusk and during the early evening. Some species have peak feeding around midnight or in the early hours of the morning. Once a female mosquito take a blood meal from an infected person, the parasite develops within the mosquito. 8 to 35 days later, depending upon temperature and the species of *Plasmodium* parasite the mosquito is capable of transmitting the disease.

Malaria is not transmissible from person to person. Susceptibility in humans is apparently universal, but except in humans with certain genetic traits. Most black Africans show natural resistance to infections of *P. vivax*, which is associated with the lack of Duffy factor on their red blood cells. Persons with sickle cell trait have relatively low parasitemia if infected with *P. falciparum* resulting in relative protection from severe disease.

WHAT ARE THE SYMPTOMS?

Malaria may present a varied clinical picture depending upon the parasite involved. Symptoms of *P. falciparum* infection may include fever, chills, sweats, cough, diarrhea, respiratory distress and headache, and may progress to icterus, coagulation defects, shock, renal and liver failure, acute encephalopathy, pulmonary and cerebral edema, coma and death. Infection with *P. vivax, P. malariae,* or *P. ovale* are generally not life threatening, except in the very old, the very young and in patients that are immunocompromised. Symptoms may begin with indefinite malaise and a slow rising fever several days in duration, followed by shaking chills and rapidly rising temperature, usually accompanied with headache and nausea, and ending with profuse sweating. After a period free of fever, the cycle of chills, fever and sweating is repeated every one to three days. Duration of the attack may vary from a week to a month or longer if left untreated. Infections may persist for as long as 50 years with recurrent febrile episodes.

HOW IS MALARIA DIAGNOSED?

Diagnosis is accomplished through demonstration of the malaria parasites in blood films. Repeated microscopic examination every 12 – 24 hours due to variation in the density of *P. falciparum* parasites in the peripheral blood and parasites are often not visible in patients recently or actively under going treatment.

Antibodies may appear after the first week of infection, but may persist for years. The use of IFA or other immunological tests may indicate a past malaria infection, so they are not useful for diagnosis of current illness.

Treatment should begin as soon as possible after confirmation of the diagnosis. Specific treatment regimes depend upon weather the case is diagnosed as complimented or uncomplimented malaria. This is differentiated by the severity of the clinical symptons, the level of parasitemia, the species involved and the location of transmission. Patients diagnosed with severe clinical manifestations and parasitemia involving more than 1% - 2% of red blood cells suffering from complicated malaria. This incures a higher risk of morbidity and death.

WHAT IS THE TREATMENT FOR MALARIA?

Two types of drugs are used to treat malaria, blood schizonticides and tissue schizonticides. Blood schizonticides attack the parasites within red blood cells. They are used in acute infection to prevent or terminate

Malaria is a reportable condition under the Army Medical Surveillance System. Contact your local Preventive Medicine Activity to report any suspected cases.

the clinical attack. Tissue schizonticides act on the exoerythrocytic parasite stages in liver cells to prevent a relapse.

For uncomplicated non-resistant malaria, chloroquine is the drug of choice. If chloroquine therapy is ineffective, or if the infection was acquired in an area with chloroquine resistant malaria, mefloquine is the next drug of choice, followed by quinine in combination with either doxycycline or pyrimethamine-sulfadoxine (Fansidar®). Tetracycline can be used as an alternative to doxycycline. Tetracycline and doxycycline should not be used in children younger than 8 years in age.

Complicated malaria is almost always a result of *P. falciparum* infection. Patients should be treated with IV quinidine.

HOW IS MALARIA PREVENTED?

Chemoprophylaxis is required when operating in malaria endemic areas. The choice of regimes is determined by the drug resistance in specific locations, prior reaction to anti-malarial drugs and occupational specialty. For specific chemoprophylaxis requirements, contact Preventive Medicine.

Chemoprophylaxis should begin 2 weeks prior to departure to allow adequate blood levels of medication to develop. The only exception to this is doxycycline which should initated 1 – 2 days prior to departure. Personnel on flight status and military divers should use doxycycline. Chemoprophylaxis should continue for 4 weeks after leaving a malaria endemic area. This ensures supression of the disease.

Minimizing exposure to mosquito bites prevents infection with Malaria. Make sure windows and doors are covered with screens that are serviceable and do not have any holes. Wear long-sleeved shirt, long pants and socks whenever you are outdoors. Lose fitting clothing prevents mosquito bites through thin fabric. Use insect repellents that have been approved by the Environmental Protection Agency.

For your skin, use a product that contains 20-50% **DEET** (N,N-diethyl-meta-toluamide). **DEET** in higher concentrations is not more effective. Do not use **DEET** on children below the age of 3 Years. Apply **DEET** lightly and evenly to exposed skin; do not use beneath clothing. Avoid contact with eyes, lips and broken or irritated skin. To apply to your face, first place a small amount of **DEET** onto your hands and then carefully spread a thin layer. Do not inhale aerosol formulations. Wash **DEET** off when your exposure to mosquitoes ceases.

For your clothing, use an insect repellent spray to help prevent bites through the fabric. Use products that contain either **PERMETHRIN** or **DEET**. **PERMETHRIN** is available commercially as a 0.5% spray formulation. When using any insect repellent, always **FOLLOW THE LABEL DIRECTIONS.**

Risk of infection with Dengue Fever can be significantly reduced by using the **DOD INSECT REPELLENT SYSTEM**. In addition to the proper wear of the battle dress uniform (BDUs), which provide a physical barrier to insects, this system includes the concurrent use of both skin and clothing repellents:

Standard military skin repellent, INSECT/ARTHROPOD REPELLENT LOTION, 33% **DEET**, long acting formulation, 1 application lasts up to 12 hours, **NSN 6840-01-284-3982**

Standard military clothing repellents, either: PERMETHRIN ARTHROPOD REPELLENT, Clothing Application (aerosol spray), 0.5% **PERMETHRIN**, 1 application lasts through 5 – 6 washes **NSN 6840-01-278-1336**; or INSECT/ARTHROPOD REPELLENT TREATMENT (impregnation kit), 40% **PERMETHRIN**, 1 application lasts the life of the uniform, **NSN 6840-01-345-0237**. Dry cleaning uniforms will remove **PERMETHRIN** from the clothing and will require re-treatment.

When deployed to mosquito infested areas, additional protection may be required. INSECT NET PROTECTOR, FIELD (bed netting), **NSN 7210-01-364-2197** when treated with **PERMETHRIN** will protect troops from vector-borne diseases while sleeping.

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